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being washed off the rocks by the tide. I am inclined to think that the snout plays some part in helping the limpet to get home, as this organ is extremely sensitive, and certainly plays an important part in discovering suitable food. I intend carrying on more extended observations with a view to the more complete elucidation of this puzzling question in regard to the limpet's locality-sense, but this preliminary notice may possibly be of some interest.—*J. R. Davis, in Nature for Jan. 1, 1885.*

ANTHROPOLOGY.¹

ELEMENTS OF GENERAL ANTHROPOLOGY.—Without drawing invidious comparisons, it would not be unfair to say that anthropological science is better organized in France than in any other country. The Dictionary of Anthropological Sciences, now going through the press in Paris, is just at this moment followed by a colossal work by Dr. Paul Topinard. The first volume, of 1157 pages, entitled "*Eléments d'Anthropologie générale*," relates to the history of anthropological investigations and to those special investigations which have been prosecuted upon the human body. The second part of the *Anthropologie générale* will bring together all the matter furnished by the different branches of the natural history of man, taking into account instructions furnished by accessory sciences, and will make a synthesis of these results, concluding with a discussion of man in time, his origin and his future.

The second volume of the work will be the application of the zoölogic method to the determination of all the types of the human species and of all the races. This will be denominated "*Anthropologie spéciale*."

Without spending a word in the praise of a work which speaks for itself, we will give our readers a few of the tables not accessible in any text books, but indispensable even to intelligent readers.

The first six chapters are historical, tracing with great minuteness the methods of studying man from Herodotus, Hippocrates, Aristotle and Galen down to the foundation of the Anthropological Society of Paris. The next three chapters, VII, VIII, IX, treat of the methods to employ in anthropological research. The remaining chapters are devoted to the study of the hair, nose, color of hair, eyes and skin, cephalic indices, height, brain-weight, skull-cubage, craniometry, zoölogic characters, æsthetic characters and anthropometry.

In a former number of the NATURALIST we called attention to a fact, often noticed, that the method of the formation of races is in a certain sense antizoölogical. As Professor Flower observes, the methods of the formation of species are necessarily disper-

¹ Edited by Prof. OTIS T. MASON, National Museum, Washington, D. C.

sive, centrifugal. As in the cosmic period heavenly bodies were thrown off by a revolving mass, so have species arisen by that isolation which is necessary to the fixity of hereditary characteristics. There seems to be a growing conviction that the first human stem threw off at least three branches to which the specific law just mentioned applied. But expanding indefinitely the borders of these subspecies, if you like, soon overlapped and set up a conrescent, concurrent movement, resulting in a diversity of races.

Dr. Topinard accepts this tripartite division of humanity, developed by Cuvier and enforced by Flourens and de Quatrefages, but justifies this plan by arguments wholly his own.

Taking the section of the hair or crinal index as a primary classific concept, he gives the table below :

- | | | |
|--|---|--|
| 1. Hair straight, section more or less round, scarce on the face and body. | { | Yellow and red races of Asia and America. |
| 2. Hair nappy or very spiral, section more or less elliptical. | { | Negro races of Africa and Oceanica. |
| 3. Hair more or less curled or wavy, oval in section. | { | European races, Australians, Nubians, etc. |

The next concept is the nasal index, to which Dr. Topinard attaches great importance. Adding this to the color of the skin we have :

Leptorhines (living) 69 and less	White Races [Leucoid]	{	Hyperleptorhine	Anglo-Scandinavian (Kymri)
		{	Leptorhine (non-aquiline)	Celts
		{	" (aquiline)	Semites
Mesorhines (living) 70 to 81.4	Yellow Races [Xanthoid]	{	Flat { Leptorhine (cranial) noses { Mesorhine (cranial)	Eskimo Yellow races of Asia
		{	Saliant nose	Red-skins
Platyrrhines (living) 82 and above	Black Races [Melanoid]	{	Well formed nose	African Negroes
		{	Nose coarse, with enormous alæ	Melanesians and Australians

The nasal index on the living is the ratio between the length of the nose from the root to the outer insertion of the septum and the width outside of the alæ.

The subject of color is further discussed in its relation to the eyes and hair and the races grouped as below :

Eyes, color. 1. Black and blackish, diff. shades (Top. 317).

2. Green.

3. Hazel.

4. Blue and clear of diff. shades, includ. clear gray.

Hair, color. 1. Absolutely black.

2. Dark brown.

3. Clear chestnut.

4. *a.* Blond, yellowish.

b. " reddish.

c. " ashy.

d. " clear.

5. Red.

Skin, color. 1. Absolutely black.

2. Brown, shaded with red.

3. Brown, yellowish or olive.

4. Reddish.

- Skin, color. 5. Yellow or olive.
 6. Yellowish white.
 7. Brown white.
 8. *a.* Rosy white.
 8. *b.* Florid white.
 9. Freckled.

By color { *Blonds.* Anglo-Scandinavians or Kymri.
 WHITE { Chestnut. Celto-Slavs.
 [Leuroid] { Brunette. Mediterraneans and Semites.
 { Reddish (ruddy). One of the two Finnish types.

YELLOW { Yellow proper. Races of Asia and Eskimo.
 { Red { Red proper. Redskins and Caribs.
 { Yellowish red. Guaranis, Botoceodos.
 { Olive red, Peruvians.
 { Blackish. Charruas (Uruguay); Anct. Cal., So. Dravidas.

BLACK { Yellowish. Hottentots.
 { Reddish. African Negroes.
 { Blacks proper. Australians, Blacks of India; Tasmanians and Papuans,
 { Negritos, African Negroes.

The cephalic index is the ratio of the greatest skull width divided by the greatest skull length. As to the boundaries of the terms applied to these ratios, most unhappily the doctors disagree. Dr. Topinard's table is as follows:

Dolicocephaly. 74 per cent and less.
 .64 and less Ultradolicocephaly.
 .65-.69 Dolichocephaly.
 .70-.749 Subdolichocephaly.

Mésaticéphaly. 75 to 79.9 per cent.
 .75, .76 Sub—
 .77 Medium.
 .78, .799 Super.

Brachycephaly. 80 per cent and over.
 .80 to .84 Sub—
 .85 to .89 Super.
 .90 and over Ultra.

In addition to these the following terms are in use:

Acrocephaly. Skull high in proportion to the width.
 Oxycephaly. Skull in shape of sugar-loaf.
 Platycephaly. Noting flat skulls.
 Chamæcephaly. Noting low skulls.
 Stenocephaly. Noting narrow skulls.
 Trochocephaly (*τροχάω*, to be round). Noting spherical skulls.
 Macrocephaly. Noting large skulls.
 Microcephaly. Noting small skulls.
 Plagiocephaly. Noting oblique skulls.
 Cymbocephaly. Noting skulls with hollow bregma.
 Scaphocephaly. Noting skulls with keel-shaped crests.
 Sphenocephaly. Noting wedge-shaped skulls.
 Trigonocéphaly. Noting triangular skulls.
 Pachycephaly. Noting skulls with thick walls.

The application of the cranial index to the divisions of the human species previously considered, results as follows:

I. White races	<table border="0"> <tr> <td>Dólcho</td> <td rowspan="3">{</td> <td>Anglo-Scandinavians, Franks and Germans.</td> <td rowspan="3">Fins</td> </tr> <tr> <td>Mésati</td> <td>of one type, Mediterraneans.</td> </tr> <tr> <td>Bráchy</td> <td>Semites, Berbers, Egyptians. Celto-Slavs, Ligurians, Laps.</td> </tr> </table>	Dólcho	{	Anglo-Scandinavians, Franks and Germans.	Fins	Mésati	of one type, Mediterraneans.	Bráchy	Semites, Berbers, Egyptians. Celto-Slavs, Ligurians, Laps.
Dólcho	{	Anglo-Scandinavians, Franks and Germans.		Fins					
Mésati		of one type, Mediterraneans.							
Bráchy		Semites, Berbers, Egyptians. Celto-Slavs, Ligurians, Laps.							

II. Yellow races	Dólicho	{ Eskimo, ancient Tehuelches, some Americans, Santa Barbara, Mecronesia here and there; in Asia here and there, Melanesians.
	Mésati	{ Polynesians.
	Bráchy	{ American type, Alaska Siberia, Mongols, Mantchoos, Indo-Chinese Dravidians, Thibetans, Malay.
III. Black races	Dólicho	{ Australians, Veddahs and congeners, typical Melanesians, African Negroes, Bushmen.
	Mésati	{ Tasmanians, Mandingos, Haoussas.
	Bráchy	{ Negritos of Malaysia and the Andamans.

It will be readily seen that the cranial index in its three branches applies to each of the three divisions of humanity (subspecies), the significance of which seems to be that the tendency to pass from one to the other belongs to the whole species rather than to any of its three divisions.

In this résumé we shall have space to mention but one other characteristic, stature :

Nomenclature of Stature.

Tall	men	1 ^m , 70 and above,	women	1 ^m , 58 and above
Ultramedium	"	1 ^m , 69 to 1 ^m , 65	"	1 ^m , 57 — 1 ^m , 53
Inframedium	"	1 ^m , 65 — 1 ^m , 60	"	1 ^m , 52 — 1 ^m , 40
Short	"	1 ^m , 60 — below	"	1 ^m , 39 — below

Combining this mark with all previously mentioned, Dr. Topinard groups the races studied as follows :

<i>Vivo-nasal Index.</i>	<i>Hair.</i>	<i>Cranial Index.</i>	<i>Skin Color.</i>	<i>Height.</i>	<i>Races.</i>
White sub-species. Leptorhine	Wavy (oval sec'n)	Dolichocephalic	{ Blond Ruddy Brown	Tall Tall Short	Anglo-Scandinavians Fins, type I. Mediterraneans
		Mesaticephalic	Brown	(relative) Short	Semites, Egyptians
		Brachycephalic	{ Brown Chestnut	Short Medium	Laps, Ligurians Celto-Slavs
Yellow sub-species Mesorhine	Coarse, straight round-section, long on the head, body glabrous	Dolichocephalic	{ Yellow Reddish	Short Tall	Eskimo Tehuelches
		Mésaticephalic (.76)	Reddish	Tall	Polynesians
		Brachycephalic	{ Reddish Yellow Yellow'h Olivish Black	Tall Short Medium Short Tall	Redskins Yellow race (of Asia) Guaranis Peruvians Australians
Black sub-species Platyrrhine	Bushy (oval section)	Dolicocephalic	Yellow'h	Very short	Bushmen (steatopygians)
		Dolichocephalic	Black	Tall (eyebrow the root)	Melanesians salient, nose deep at
		Mesaticephalic	Black	Tall	African Negroes
	Woolly (elliptical section)	Brachycephalic	Black	Medium	Tasmanians
			Black	Short	Negritos

In a future number of the NATURALIST it may be advantageous to give Dr. Topinard's instructions about taking measures on the living.